JUNE 1961 — 24

Your attention is invited

NEWS OF THE SURVEYING AND MAPPING DIVISION OF ASCE

AMERICAN SOCIETY OF CIVIL ENGINEERS FOUNDED 1852

DIVISION ACTIVITIES
SURVEYING AND MAPPING DIVISION

Proceedings of the American Society of Civil Engineers

NEWS

June, 1961

PURPOSE OF THE SURVEYING AND MAPPING DIVISION
(As recently revised)

"to develop and disseminate the knowledge and to promote the profession of civil engineering in surveying, mapping, and related fields, including, but not limited to, land, engineering, cartographic, geodetic, oceanographic, and interplanetary surveying; to foster better surveying data and procedures; to prescribe standards of accuracy; and to advance surveying and mapping education."

As of December 1, 1960, a total of 2110 members of the American Society of Civil Engineers were enrolled in the Surveying and Mapping Division.

EXECUTIVE COMMITTEE - 1961

Chairman: Arthur J. McNair (1962)
Professor of Civil Engineering
Cornell University
Ithaca, New York

Vice-Chairman: Oliver R. Bosso (1963)
Engineer of Surveys
Division of San Francisco Bay Toll Crossings
Dept. of Public Works, State of California
151 Fremont Street
San Francisco 5, California

Earle J. Fennell (1961)
Assistant Chief Topographic Engineer
U. S. Geological Survey
Washington, D. C.

B. Austin Barry (1964)
Professor Civil Engineering
Manhattan College
New York 71, New York

Board Contact Member: D. B. Ventres
Consulting Engineer
Vogt, Ivers, Seaman & Assoc.
1025 Connecticut Ave., N. W.
Washington 6, D. C.
(Capt., CEC, U.S.N.R. retired)

Secretary: Franklin R. Gossett, Captain
U. S. Coast and Geodetic Survey
P. O. Box 4096
Patrick Air Force Base, Florida

COMMITTEES - 1961

Newsletter editors - Kenneth S. Curtis, Joe Colcord, B. Thomas Hopkins, Philip Newlin

Administrative Committees:

Publications - Lawrence Perez, Chairman; Earle J. Fennell

Research and Development - Roland H. Moore, chairman; Junius T. Jarman, William T. Pryor, William B. Snow, Morris M. Thompson, secretary.

Sessions Programs - Robert T. Howe, chairman; Oliver R. Bosso, Leo V. Nothstine.

Technical Committees:

Cartographic Surveying - Daniel Kennedy, chairman; Mitton J. Harden, Robert H. Naylor, Curtis E. Weddle, Jr.

Engineering Surveying - Milton O. Schmidt, chairman; Oliver R. Bosso, Robert H. Dodds, Peter A. Hakman, Arnold A. Katterheary, John G. McEntyre, Claude A. Rothrock,

Geodetic Surveying - Carl M. Berry, chairman; Lansing G. Simmons, Julius L. Speert, Glen W. Moore.

Land Surveying - Ralph M. Berry, chairman; Sol A. Bauer, Curtis M. Brown, Herbert S. Hicks, Phillip Kissam.

ASCE PHOENIX CONVENTION - APRIL 10-14, 1961

Prof. Philip Newlin, University of Arizona, scheduled a very interesting program for the Spring Convention in Phoenix, Arizona. Mr. Oliver R. Bosso, Oakland, California, vice-chairman of the Executive Committee, presided at the two sessions of the Surveying and Mapping Division and we are indebted to him for the following resume of the program. The Monday session was attended by approximately 80 and the Tuesday session by about 100. All papers were well received by those in attendance.

Monday, April 10, 1961

2:30 p.m. CONTROL TRAVERSES AND THEIR ADJUSTMENT
Everett D. Morse, Supt., Civil Engineering, Houston Power and Light Company, Houston, Texas.

Control traverses, often more convenient and economical to execute than triangulation, pose a special problem in the matter of obtaining consistent and dependable results. The application of generally accepted rules for

the determination of probable error to the weighting of traverse lines was discussed. The programming of equations for simltaneous solution on a digital computer can do much to reduce uncertainty in the adjusted values. Even though transit and tape traverse is the most widely used field operation in surveying, there are indications that traverses utilizing the propagation of radio and light waves for distance measurement are gaining increasing acceptance. In obtaining a satisfactory adjustment of control traverses, no one method will fit all conditions. Results can be improved by eliminating, as far as is economically practicable, systematic errors of any appreciable magnitude.

3:10 p.m. SURVEYOR'S FOOTSTEPS

William C. Wattles, Glendale, California

Acceptance of "footsteps of the surveyor" as a designation for proper procedure in relocation surveys, requires the concept of acceptance of "result of the footsteps of the surveyor" as a proper definition of the phrase. This is indicated in actual practice and experience, that final lines, monuments, and records are established in a majority of cases by indirect methods rather than directly as shown on maps or in field notes and descriptions. The procedure for obtaining proper locations consists of complete examination and aggregation of all observable and obtainable data, both physical and documentary, then analyzing and interpreting the same to determine the plan of location most nearly approaching the original positions. Modernization and complete map records of the relocation, together with supplemental documents and ground documentation where needed or desired is the sign of maintenance of professional surveying standards and ethical practice.

3:50 p.m. CONTROL SURVEYS FOR THE GLEN CANYON DAM

Howard L. Fink, Chief of Office Engineering Division, U. S. Bureau of Reclamation.

The planning, design, and construction of any large multi-purpose structure requires the combined professional efforts from many branches of engineering. In order to insure that this investment of talent is fully utilized to insure that the completed structure will, over extended periods, safely perform the functions intended in its design, timely and accurate on-the-site survey control is necessary. The Bureau of Reclamation met these criteria with control surveys at Glen Canyon Dam and a number of methods, equipment, and local problems were discussed.

4:30 p.m. NEW GEOLOGICAL MAPS FOR ARIZONA

Fred J. McCrory, Arizona Bureau of Mines, Tucson.

Discussion of the preparation of adequate geologic maps for describing the types, distribution, relations, and structure of the numerous rock units in the state of Arizona. Owing to the postwar boom in exploration for mineral deposits, petroleum, and ground water, all available stocks of a small scale Federal Survey map compiled in 1924 became exhausted and the Arizona Bureau of Mines in conjunction with the Mineral Deposits Branch of the U. S. Geological Survey embarked upon a project which resulted in the issuance of larger scale colored and more detailed geological maps for each of the counties in Arizona. Slides were used to show the various steps taken in development of the final maps.

Tuesday, April 11, 1961

2:30 p.m. PHOTO INTERPRETATION IN TUNNEL SITE SELECTION

Thomas W. Mitcham, Dept. of Geology, University of Arizona, Tucson. Discussion of the use of photo interpretation in the selection of tunnel sites along a hundred mile route for an Interstate Highway alinement across the heart of the Rocky Mountains. He told of the ease with which certain important geologic features such as faults are detected from aerial photographs which are likely to pass undetected even after detailed field study. He also emphasized that rock type is not so important a consideration as are rock structures and rock alteration.

3:10 p.m. MODERN OPTICAL INSTRUMENTS

Porter W. McDonnell, Product Manager, Surveying, Dietzgen Company, Chicago, Illinois.

The paper was directed to the engineer who is familiar with the standard transits and levels but not with the more modern optical-reading instruments. He discussed the advantages, methods of operation and nomenclature of the more modern optical-reading theodolites and self-leveling levels. The interior workings of the instruments was shown by using slides of cut-away sections.

3:50 p.m. THE GEODIMETER AND TELLUROMETER

Carl Winikka, Photogrammetry and Mapping, Arizona Highway Dept. The experience of the Arizona Highway Dept. with the geodimeter and tellurometer indicates both to be equally good in performing work within their capabilities. The tellurometer is an instrument designed to measure distances from a few miles to 50 miles which can be used with some sacrifice in accuracy to measure lines down to several hundred feet in length. The geodimeter "bridges the gap" by providing accurate distances in the range between short taping work and tellurometer control surveys. The tellurometer and geodimeter will play a role of increasing importance in the field of surveying and mapping by making possible the rapid preparation of more accurate surveys and maps.

MINUTES OF MEETING OF EXECUTIVE COMMITTEE SURVEYING AND MAPPING DIVISION

Washington, D. C.
March 25, 1961

The Executive Committee of the Surveying and Mapping Division met at the Shoreham Hotel in Washington, D. C., at 8:30 a.m. on Saturday, March 25, 1961.

Members attending were: Arthur J. McNair, Chairman; Oliver R. Bosso, Vice Chairman; Earle J. Fennell; B. Austin Barry; D. B. Ventres, Board contact member; and Franklin R. Gossett, Secretary. Also, the following chairmen and members of committees of the Surveying and Mapping Division attended an appreciable part of the meeting: Kenneth Curtis, Newsletter Editor; Roland H. Moore, Chairman, and Morris M. Thompson, Secretary of the Committee on Research and Development; Carl M. Berry, Chairman of the Committee on Geodetic Surveying; Ralph M. Berry, Chairman, and Curtis M. Brown, member of the Committee on Land Surveying.

The minutes of the last meeting of the Executive Committee (Aug. 24 and 25, 1960 at Cornell University, Ithaca, New York) were approved as previously submitted by mail to all members of the committee.

Captain Ventres advised on Board of Direction actions affecting the Division, and on procedures to be followed in dealings with other ASCE committees concerned with Status of Surveying and Mapping.

Reports were received and accepted from various committees. The Committee on Land Surveys submitted an "Activities Report" in which a strong plea was made for gradual and tactful raising of professional engineering standards of all land surveyors. Chairman Ralph Berry was present and participated in the discussion of the Report.

The report of the Committee on Geodetic Surveying was made verbally by Chairman Carl Berry. The committee had held a meeting on the previous day (Friday, March 24), the minutes of which will be duly submitted. Prof. Sumwalt has resigned because of change in interest. Cdr. G. W. Moore will be named as new member of this committee. Another name will be submitted this summer. One committee meeting is planned for the next calendar year. Col. Berry described the Washington State Bureau of Surveys and Maps. He was encouraged to prepare a letter to be sent out from Society Headquarters encouraging other states to establish similar organizations.

A written report was received from Chairman Schmidt of the Committee on Engineering Surveying. "Under the able direction of R. H. Dobbs, Acting Chairman, the Committee continued its manual writing activities during the past year while the Chairman was abroad. Part I of Chapter VII was published in January 1961 as Paper 2705 of the JOURNAL of the Division. This chapter is the last one in the proposed manual and deals with Construction Surveys for Bridges. Part I treats of Horizontal Control. Part II which will be published in the next issue of the JOURNAL is concerned with Vertical Control. The ASCE's Manager of Technical Publications has been requested to provide the latest interpretation of Society policy concerning the publication of technical manuals. . . Prof. McNair agreed to write Prof. Schmidt for recommendations on publication of the Manual. A late spring or mid-summer meeting of the Committee's control group is anticipated."

A written report was received from Chairman Kennedy of the Committee on Cartographic Surveying. Although the committee has held no meetings, it remains active and standing by ready to serve. It will continue to be alert to document cases for future actions pertaining to bidding for topographic mapping. This committee assisted in arrangements for the lecture by Professor Bjerhammer at the Missouri School of Mines.

No report was received from the Publications Committee. Mr. Fennell agreed to contact Chairman Perez for further information.

The report of the Committee on Research and Development was given verbally by Secretary Thompson, The last meeting of the committee was about a year ago, at which time it was decided that each member would prepare a list of major research problems of interest to the Division. This list is to be combined in a report. It was noted that the committee plans to point up problems, but is in no position to finance or conduct research or development. It sponsors publication of articles on these subjects in "Civil Engineering" and the "Newsletter."

Chairman Howe of the Committee on Sessions Programs sent in his resignation in view of his leaving the Division and transferring to other fields of interest. The Executive Committee voted to appoint Prof. Nothstine as

chairman, and to request that he recommend additional members. Chairman McNair agreed to correspond with Prof. Nothstine on the subject. It was stated that very successful sessions were held at Boston in October 1960, with Prof. Miller making arrangements and presiding.

Prof. Newlin is the local representative planning the sessions for the Phoenix, Arizona, Convention on April 10-14, 1961. Mr. Bosso will preside. Bro. Barry will serve as local representative, or select a representative for the New York Convention on Oct. 16-20, 1961, and will preside at Surveying and Mapping sessions.

The Newsletter Editor, Prof. Curtis, reported on Newsletter activities. He pointed out that the frequency and timeliness of the Newsletter were severely limited by being tied to the Journal for publication and distribution. No decision has been received from New York headquarters on the proposed separate publication of the Newsletter. It is planned to appoint regional assistant editors. Prof. Curtis is to furnish names by mail to the Executive Committee. The Executive Committee expressed its appreciation to Prof. Curtis for his excellent job as Editor.

Chairman McNair reported that the Bjerhammer distinguished foreign lectureship, sponsored by ASCE-EJC-NSF and arranged by this Division, had been successfully terminated.

Mr. Bosso reported on the status of the proposed division prize. He renewed his own generous offer and told of his effort to interest private industry. He agreed to pursue the study further and to prepare a proposal for methods of handling the proposed prize.

A large part of the time at the meeting was devoted to discussion of items which have arisen from the Report of the Task Committee on the Status of Surveying and Mapping. It was agreed that Bro. Barry should prepare a letter setting forth the views of the Executive Committee on improving the status of land surveyors. This letter would be addressed to the chairmen of the Committee on Registration of Engineers and the Committee on Professional Practice, with a copy to Capt. Ventres for use at the April meeting of the Board of Direction at Phoenix.

In order to comply with the request from ASCE Headquarters dated Feb. 2, 1961, the Executive Committee endorsed the reactiviation of the SubCommittee on the Status of Surveying and Mapping, with the same membership as previously (Barry, Quinn and Whitmore). Chairman McNair will prepare a letter instructing the committee to: (1) prepare a resume or a comprehensive final report of their previous report (Paper 2166), and (2) prepare a manual including fee standards and guidance for their application.

After discussion of educators' responsibility to stress ethical responsibility for land surveyors, it was decided to instruct the Committee on Land Surveying to prepare a statement suitable for distribution to educators, and to submit this to the next meeting of the Executive Committee for approval.

ASCE ACTIVE IN UPGRADING SURVEYING AND MAPPING

(This brief article originally appeared in the April 1961 issue of CIVIL ENGINEERING)

The Committee on Professional Practice, the Surveying and Mapping Division and Executive Secretary William H. Wisely of ASCE are actively pushing the upgrading of Surveying and Mapping to full professional status.

Late in February, Mr. Wisely, with Earle J. Fennell, F. A.S.C.E., a member of the Executive Committee of the Surveying and Mapping Division and A. O. Quinn, F. A.S.C.E., representing the Association of Professional Photogrammetrists, held conferences in Washington with top personnel of the Corps of Engineers and of the Bureau of Reclamation. These conferences with the chief government users of surveying and mapping services were very productive in achieving a better understanding of the problem. For many years most such contracts have been let on a competitive basis, and considerable readjustment is proving necessary in widely scattered field offices.

In conferences with the government agencies a great need for impartial and authoritative curves or schedules of prevailing fees in field surveying and in photogrammetry was apparent. A pamphlet that would serve the purpose of Manual of Practice No. 38 but pertaining specifically to the surveying and mapping field would be very useful.

At a recent meeting of the Committee on Professional Conduct it was concluded that specialists in the field would have to provide guidance for clients in knowing when to negotiate and when it would be permissible to use competitive bidding methods. The Committee on Professional Conduct recommended that the Task Subcommittee on Professional Practice in Surveying and Mapping be reactivated in the Committee on Professional Practice to provide such guidance. Mr. Wisely urged that the Division instruct its representatives in the subcommittee to apply themselves immediately to the production of a manual which would include prevailing fee data and guidance as to the delineation between professional and non-professional services.

Letters have been sent by ASCE to all known users of contract surveying, mapping and photogrammetric services urging negotiation for all work involving engineering judgment. These include highway and public works agencies; the Corps of Engineers, U. S. Army; the Department of the Interior; and others. Response has been favorable from federal and state agencies despite the serious problems of transition from competitive bidding to negotiation.

As requests for bids where price appears to be a factor come to the attention of ASCE, Executive Secretary Wisely writes a letter to the contracting agency urging that they change to negotiation procedures. More than thirty such letters have gone out in the past few months. Most reputable firms in this field are refusing to bid competitively, which is a real factor in the success of the drive to upgrade the profession.

TECHNICAL BULLETIN SERIES OF COAST AND GEODETIC SURVEY

A series of Technical Bulletins was inaugurated in 1958 to present primarily to the personnel of the Coast and Geodetic Survey and incidentally to others technical information related to the Bureau's scientific and technical activities. It is designed for quick publication and dissemination and supersedes The Journal of the Coast and Geodetic Survey, the last issue of which was published in Octover 1957. These Coast and Geodetic Survey Technical Bulletins are available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

No. 1 Aerotriangulation Adjustment of Instrumental Data by Computational Methods. William D. Harris, January 1958, 4 p., Price 5¢.

Results of the cooperative effort of several units and individuals of the Photogrammetry Division in seeking a computational method of aerotriangulation adjustment, which could be coded for automatic computation, to replace the burdensom graphical-numerical method.

No. 2 Tellurometer Traverse Surveys. Lieutenant Hal P. Demuth, March, 1958, 8 p., Price 15¢.

Contains a brief description of the Tellurometer, preliminary procedure for its use on geodetic surveys, and the results of field surveys along the Alaska coast and along a highway route in Virginia.

No. 3 Recent Increases in Coastal Water Temperature and Sea Level—California to Alaska. H. B. Stewart, B. D. Zetler, & C. B. Taylor, May 1958, 11 p., Price 20¢.

Documents the recent increases in sea water temperature and sea level on our west coast with data from Coast and Geodetic Survey tide stations, presents the analyses and suggests that the increases result from changes in the wind pattern over the eastern North Pacific.

No. 4 Radio Telemetry Applied to Survey Problems. Richard R. Ross, February 1959, 7 p., Price 15¢.

Describes the radio telemeter systems devised to solve two of the Bureau's problems for the remote recording of unattended instruments. One is a seismograph on a distant mountain and the other tidal current meters in a busy waterway.

No. 5 Raydist on Georges Bank. Captain Gilbert R. Fish, April 1959, 25 p., Price 25¢.

Describes and evaluates the phase-comparison survey-navigation system known as Raydist which was used by the Coast and Geodetic Survey on its offshore surveys of Georges Bank in 1957 and 1958. Raydist control for hydrographic surveys is a supplement to that furnished by Shoran and the Electronic Position Indicator.

No. 6 The Tsunami of March 9, 1957, as Recorded at Tide Stations. Garrett G. Salsman, July 1959, 18 p., Price 15¢.

Presents the factual record of the March 9, 1957, tsunami as shown by the tide gage records and other data on file. The record has been examined for various features in order to provide answers to some frequently asked questions about such waves.

No. 7 Pantograph Adjustment. G. C. Tewinkel, July 1959, 3 p., Price 5¢.
Presents a method of systematically adjusting a pantograph which does not accurately reproduce dimensional figures.

No. 8 Mathematical Basis of Analytic Aerotriangulation. G. C. Tewinkel, August 1959, 9 p., Price 15¢.
Presents a mathematical basis of the solution of analytical aerotriangulation that is currently being programmed for electronic computation in the Coast and Geodetic Survey.

No. 9 Gravity Measurement Operations in the Field, Lieutenant Commander Hal. P. Demuth, September 1959, 10 p., Price 15¢.
Contains a brief description of gravity measurement field operations with emphasis on those items which have not been covered by various published manuals. Included are meter calibration, small and large dial measurements, base loop connections, elevation determination by altimeter, and transportation and care of the meter.

No. 10 Vertical Adjustment of Instrument Aerotriangulation by Computational Methods. William D. Harris, September 1959, 3 p., Price 10¢.
Develops the vertical adjustment of aerotriangulation by computational methods in much the same manner as the horizontal adjustment was developed in Technical Bulletin No. 1.

No. 11 Use of Near-Earth Satellite Orbits for Geodetic Information. Paul D. Thomas, January 1960, 36 p., Price 45¢.
Summarizes some of the preliminary background material and planning for the use of a geodetic near-earth satellite which is expected to be placed in orbit during the latter part of 1961. It covers the principal geodetic uses, the type of satellite most useful, the recommended program, and tracking methods. An appendix discusses energy requirements, accuracy of velocity, injection angles required to produce a near-earth satellite, and use of the satellite trajectory to determine geodetic data.

No. 12 Use of Artificial Satellites for Navigation and Oceanographic Surveys. Paul D. Thomas, July 1960, 24 p., Price 25¢.
Describes the use of near-earth satellites in the field of navigation and oceanographic surveys. It is a companion to Technical Bulletin No. 11. The subject has been developed against a background of terrestial navigational systems both celestial and electronic. Mathematical formulas are derived in the three appendixes.

No. 13 A Singular Geodetic Survey. Lansing G. Simmons, September 1960, 13 p., Price 15¢.
Describes in some detail the planning, operations, and results of a remarkably accurate horizontal control survey which covered an area of approximately four thousand square miles. While the requirements called for an accuracy of 1:400,000, the final results were better than 1:1,000,000. This was partly due to the numerous lines measured with the Geodimeter. These measurements were made, for the first time, from the tops of tall steel surveying towers.

No. 14 Film Distortion Compensation for Photogrammetric Use. G. C. Tewinkel, September 1960, 5 p., Price 10¢.

Describes the irregular distortion found in the film base used in aerial photography, the methods by which the errors from that cause can be reduced, and the mathematical derivation of the formulas of compensation.

TRIENNIAL REPORT OF GEODETIC OPERATIONS INVOLVING THE UNITED STATES

In connection with the Twelfth General Assembly of the International Union of Geodesy and Geophysics held at Helsinki, Finland, July-August 1960, a publication was prepared consisting of the triennial report to the International Association of Geodesy on the geodetic activities of various agencies in the United States covering the period from January 1, 1957, through December 31, 1959. Other member countries prepare similar reports. The report is published as U. S. Coast and Geodetic Survey publication number 60-2 entitled GEODETIC OPERATIONS IN THE UNITED STATES AND IN OTHER AREAS THROUGH INTERNATIONAL COOPERATION, 1957-1959 by John H. Brittain, chief of geodesy division, U.S.C. & G.S. The material in this report (1960) is arranged in five parts corresponding to the five Sections of the International Association of Geodesy: Triangulation; Precise Leveling; Geodetic Astronomy; Gravity Observations and Reductions; and Geoid Investigations. It serves as a most excellent progress report on the important geodetic operations involving the United States and is published by the U. S. Government Printing Office, Washington 25, D. C.

HIGHWAY RESEARCH BOARD BULLETINS ON SURVEYING AND PHOTOGRAMMETRY

The Highway Research Board of the National Research Council—National Academy of Sciences has published, during the past four years, bulletins on surveying, mapping, and photogrammetry which contain the appropriate papers presented at their annual meetings in Washington, D. C. All orders and requests should be addressed to: Highway Research Board, 2101 Constitution Avenue, Washington 25, D. C.

1. Bulletin 157-Photogrammetry and Aerial Surveys, 1957, 59 pages, (out of print)
   - "Introduction to Photogrammetry and Aerial Surveys" by William T. Pryor
   - "Equipment, Methods and Standards of Accuracy Applicable to Aerial Surveys" by Robert D. Miles
   - "Relationship in Contour Interval, Scales, and Instrument Usage" by William T. Pryor
   - "Applications of Photogrammetry to the Location and Design of Freeways in California" by L. L. Funk
   - "Planning Aerial Photography and Film Processing for Mapping Work" by John H. Wickham, Jr.
   - "The Engineer's Approach to Electronic Computing Methods" by Joel D. Aron
   - "Coordination of Plotting Instruments and Computers in Cross-Sectioning and Calculation of Quantities" by E. S. Preston
   - "General Discussion"

2. Bulletin 199-Photogrammetry-Developments and Applications: 1958, 82 pages, Price $2.00.
   - "Adjustment of State Plane Coordinates" by William T. Pryor
   - "Survey Security Through Photogrammetry" by D. E. Winsor
   - "Earthwork Data Procurement by Photogrammetric Methods" by C. L. Miller and T. Kaalstad
   - "10-Foot Portable Subtense Bar," by D. E. Winsor
   - "Aerial Mapping in Areas of Heavy Ground Cover" by Irvin Sternberg
   - "Photographic Targets for Markers of Survey Control" by William T. Pryor
   - "Photogrammetric Map Accuracy" by L. L. Funk

3. Bulletin 228-Photogrammetry: Developments and Applications, 1959, 68 pages, Price $1.20.
   - "North Dakota's Use of Aerial Inventory for County General Highway Maps" by E. T. Bowen, C. J. Crawford, and J. B. Kemp
   - "A Photogrammetric Approach to Highway Route Location and Reconnaissance" by Arthur C. Quinnell
   - "Photogrammetry in Highway Planning" by David S. Johnson
   - "Adjustment of Photogrammetric Surveys" by L. L. Funk
   - "Relationship of Topographic Relief, Flight Height, and Minimum and Maximum Overlap" by William T. Pryor
   - "Terrain Data for Earthwork Quantities" by L. L. Funk
   - "General Discussion"

4. Bulletin 258-Electronic Surveying: 1960 Developments, 31 pages, Price $.80.
   - "Reliability of Electronic Measuring Equipment (California)," by Rex H. Fulton
   - "The Tellurometer for Highway Survey Control (U.S.C. & G.S.)" by Austin C. Poling
   - "Tellurometer Use in Control Surveys for Mapping by Photogrammetric Methods (Arizona)" by Carl C. Winikka
   - "Evaluation of the Tellurometer for Highway Survey Control in Maryland" by George W. Cassell and Charles W. Parks
   - "Evaluation of the Tellurometer in Highway Horizontal Control Work (Mississippi)" by H. H. McBride
   - "The Tellurometer as Used for Highway Control Surveys in Virginia" by George W. Habel.

NEW HYDROGRAPHIC MANUAL

A new HYDROGRAPHIC MANUAL has been recently (1960) issued by the U. S. Coast and Geodetic Survey as publication number 20-2 by Karl B. Jeffers. This edition of the Manual serves as a guide in the execution and processing of hydrographic surveys. Chapters have been written on specifications for hydrographic surveys; plans and preparations; equipment and instruments; control and signal building; hydrography; the smooth sheet; and reports and miscellaneous.

Since Special Publication 143 was issued in 1942 there has been rapid development in control systems and echo sounders which renders that work obsolete in some respects. Although parts of the new text are carried forward from S.P. 143, much information has not been repeated and copies of

the 1942 edition should not be destroyed but should be retained for reference purposes. The new manual 20-2 is issued in loose leaf form, contains 283 pages, and costs $2.00. It can be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. (Catalog No. C 4.19/2:20-2)

OTHER BASIC HYDROGRAPHIC SURVEYING REFERENCES

U. S. Coast and Geodetic Survey publication number 20-1 entitled WIRE DRAG MANUAL by Kenneth S. Ulm has been recently (1959) prepared and issued for the purpose of giving the general requirements for the execution of wire-drag surveys. The progress and development of instruments, equipment, and methods in the past 34 years necessitated the revision of Special Publication No. 118 on wire dragging published in 1925. The changes introduced by the advent of electronic control, improved methods of communications, the use of more efficient equipment, and improved drafting techniques, have caused modifications and improvements in field and office operations, which were not considered in the older manual. The 103 page manual is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. for 35 cents.

The U. S. Navy Hydrographic Office issued (1958) the latest revised edition of H. O. Publication No. 9, AMERICAN PRACTICAL NAVIGATOR originally written by Nathaniel Bowditch in 1799 and later by his son, Jonathan Bowditch. In 1868 the U. S. Navy Hydrographic Office bought the copyright and has published the book since that time, periodic revisions being made to keep the work in step with navigational improvements. This epitome of navigation, still commonly known as 'Bowditch,' has been extensively revised and much completely rewritten. All the illustrations are new, color has been added, practice problems included, selected references given, and the appendix enlarged. The intent of the original author to provide a compendium of navigational material understandable to the mariner has been consistently followed. Emphasis has been given to the fact that the aids provided by science can be used effectively to improve the art of navigation only if a well-informed person of mature judgment and experience is on hand to interpret information as it becomes available. Chapters include material on fundamentals, the nautical chart, piloting and dead reckoning, electronic navigation, celestial navigation, practice of navigation, oceanography, weather, production of charts and miscellaneous appendices and tables. The section on production of charts contains a review of hydrographic surveying procedures and photogrammetric methods. This valuable publication containing 1524 pages is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. at a cost of $6.25.

SUGGESTED LAND SUBDIVISION REGULATIONS

This publication is a further revision (July 1960) of suggested land subdivision regulations, which was published by the Housing and Home Finance Agency, Washington, D. C. in February 1952, and which was first revised in 1957. The regulation of land subdivision for residential and other uses is widely accepted as a function of municipal and county government in the United States. This publication is expected to help guide the preparation

of the regulations which a locality may wish to adopt. It covers the technical elements of land subdividion control. An appendix contains the FHA data sheets on subdivision exhibits. This revised publication contains 68 pages and costs 50¢. It can be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. (Catalog No. HH 1.6:L22/960)

SURVEYING OUR PUBLIC LANDS

The Bureau of Land Management has issued a new (1960) pamphlet which tells the story of public land surveys in the United States. This brief pamphlet of 15 pages outlines the historical background of the rectangular survey system and presents the modern approach using electronic devices, helicopter, and protractions. Copies are available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. at 10 cents each.

U. S. GEOLOGICAL SURVEY RESEARCH AND DEVELOPMENT

1. The United States Geological Survey has developed a 50-ft portable surveying tower for triangulation surveys. The first tower completed under the current contract has been inspected and accepted. A tower-trailer, which will permit transportation of the tower in its knockdown form behind an automobile, has also been accepted. Lift-and-carriage tests of the tower by helicopter have been successfully completed indicating the feasibility of placing the tower in isolated areas of difficult access by this method. The tower consisting of separate inner and outer towers is being tested for stability under adverse conditions. It is intended that two additional sections will be added to extend the height to 76 feet with further tests for stability.

2. The Geological Survey has carried out preliminary tests on the 3-H system (Helicopter-Hydrodist-Hoversight) for horizontal control surveys. In this system, the helicopter carries the remote unit of the Hydrodist and, by means of the Hoversight, hovers vertically over the ground point for which a position is desired. Simultaneous distance measurements are made to two ground stations whose positions are known. The system is believed to have potential value as a means of position control for mapping.

3. During the month of April the Geological Survey inspected and accepted two elevation meters at the Sperry-Sun Well Surveying Company laboratory in Richardson, Texas. These meters are completely transistorized and offer a considerable increase in reliability over the former elevation meter. The elevation meter is a road vehicle incorporating a precise pendulum for determination of slope and a fifth wheel for accurate measurement of distance. Electronic integration of the slope-distance function determines difference in elevation between any two points. The meter also contains provision for electronic determination of least squares adjustment of the elevations. The meters are scheduled for field use which will provide further evaluation of the benefits derived from their use.

4. The Geological Survey recently published the New York Vicinity Map. This map is made up of eight sheets covering all or part of 32 7 1/2-minute quadrangles. This map should be useful to those persons who are concerned with any planning activities in and around the environs of New York City.

NEWSNOTES

. . .Worthy of your reading is an article on "Surveying—Its Current Status in Civil Engineering" by Earle J. Fennell, member and immediate past chairman of the executive committee of ASCE surveying and mapping division. It appears on pages 33-34 of the April 1961 issue of CIVIL ENGINEERING.

. . . "Precise Measurement—Both Large and Small Scale" will be the theme of the Surveying and Mapping Division meetings at the ASCE Annual Meeting in New York, October 16-20, 1961. Bro. Barry, of Manhattan College is the local representative in charge of planning and arrangements.

. . . Approximately 2400 people registered and attended the 27th Annual Meeting of the American Society of Photogrammetry and the 21st Annual Meeting of the American Congress on Surveying and Mapping held March 19-25, 1961 in Washington, D. C. The ASP-ACSM exhibits were the largest of this kind ever to be presented.

. . . The Surveying Dept. of the School of Civil Engineering, Cornell University, Ithaca, New York, has announced the addition of a first-order stereoplotter, WILD A7 Autograph with a WILD EK-3 Electric Coordinate Printer to its teaching and research facilities in photogrammetry.

. . . Governor Rosellini of the state of Washington has named a 13-member advisory council to determine Washington's part in observance of the 100th anniversary of the final survey of the boundary between the United States and Canada.

. . . A recent $2230 National Science Foundation grant will help scientists at Ohio State University answer the question of whether glaciers in the United States are growing or diminishing. The project for the aerial mapping of many glaciers in the continental United States, including Alaska, has been underway since 1957 and is presently directed by Dr. Arthur J. Brandenberger, professor of Geodetic Science. It has received some $20,000 support from both the National Science Foundation and the National Geographic Society.

. . . The Puget Sound Region of the American Society of Photogrammetry in cooperation with the Canadian Institute of Surveying jointly held a half-day meeting featuring electronic distance measurement and surveying education at the University of British Columbia, Vancouver, B. C., Canada, on Friday, April 28, 1961.

. . . The Western Regional Conference of the American Congress on Surveying and Mapping will be held in Phoenix, Arizona, October 18-21, 1961, at the Westward Ho Hotel. The host will be the Arizona Section of A.C.S.M. Prof. Philip Newlin has been chosen as program chairman and is anticipating papers on:

Electronic Computers for Surveying Computations
Geodimeters in Private Practice

Boundary Survey Problems
Willcox Dry Lake Calibration Area
Control Surveys for the Jet Drone Surveillance Range
Traffic Safety Control for Survey Parties
U. S. Bureau of Land Management Survey Procedures of Today

USE OF THE NEWSLETTER

Your are urged to make use of this Division Newsletter for announcements, inquiries, personnel news, committee reports, surveys, and other items of interest to Division members. Please send these to the editor:

PROFESSOR KENNETH S. CURTIS
School of Civil Engineering
Purdue University
Lafayette, Indiana

Assistant Editors:

Prof. Joe E. Colcord, Jr.
Dept. of Civil Engineering
University of Washington
Seattle, Washington

Mr. B. Thomas Hopkins
Asst. Atlantic Region Engineer
U. S. Geological Survey
1109 North Highland Street
Arlington, Virginia

Prof. Philip B. Newlin
Dept. of Civil Engineering
Univ. of Arizona
Tuscon, Ariz.

TO ASCE MEMBERS OF CHI EPSILON

Chi Epsilon Fraternity, national civil engineering honor society, has officially offered to supply the funds necessary to furnish a formal Conference Room at the United Engineering Center. This room will be on the ASCE executive floor, will be named "The Chi Epsilon Room," and will be available for conference and committee meetings.

Pledges are not expected, but single voluntary gifts, from members and friends of the Fraternity are earnestly solicited. An attractive Commemoration Book has been planned in which donors of $100 or more (singly or in groups) may inscribe the name of a revered person.

On request, the national chairman, Samuel Kramer (8701 Shore Road, Brooklyn 9, New York) will be glad to mail a descriptive brochure. Your gift is tax deductible if you make your check out to "ASCE CHI EPSILON ROOM FUND" and mail it to Mr. Donald D. King, ASCE, 33 West 39th Street, New York 18, N. Y. Your gift will be automatically credited to the quota of your initiating Chapter. The national goal is $10,000.

CUMULATIVE INDEX TO ASCE PUBLICATIONS

A three-part index to Proceedings, Transactions, and CIVIL ENGINEERING is now available. This 816-page, 6 in. by 9 in., blue cloth bound book contains a subject and name index for CIVIL ENGINEERING that covers the magazine since its inception in 1930 through 1959. For Proceedings, the coverage is from 1950 through 1959, a period in which most papers were not included in Transactions. The 1935 through 1959 Transactions are indexed to provide a valuable source of reference to "modern" technical civil engineering literature.

The list price for this volume is $20.00. Members of ASCE and public and school libraries are entitled to a 50% discount and will, therefore, pay $10.00 per volume.

Order your copy of this INDEX by use of the coupon herewith.

----------CUT HERE----------

American Society of Civil Engineers
33 West 39th Street, New York 18, N. Y.

Please send me_____copy(s) of the ASCE CUMULATIVE INDEX. Enclosed herewith is my remittance for $_____. My ASCE membership grade is _____. List price, $20.00; ASCE members and public and school libraries, $10.00.

_____
Print Name

_____
Address

_____

_____
City Zone State

CUM IND

BIBLIOGRAPHY ON AIRPORT ENGINEERING

This comprehensive "Bibliography on Airport Engineering" chronicles and catalogs the engineering knowledge and experience that has appeared in papers, articles, and reports in the publications of the free world from1938 to 1959. The Bibliography has grown out of the file maintained by the author, Shu-t'ien Li, F. ASCE, and has been augmented and vertified in technical libraries in the United States.

ASCE publication 1960-41 is divided into 26 chapters and has a total of 2,335 entries. The subjects covered are, in part, location and planning, design and maintenance, earthwork, drainage, pavements (both rigid and flexible), lighting, hangars, heliports, and unit costs. Of special importance at this time is a chapter (with 169 entries) dealing with launching bases, space stations, and allied subjects.

The list price for this 184-page hard-bound book is $8.00; ASCE members and public and school libraries receive a 50% discount. The coupon herewith should be used to order this book.

----------CUT HERE----------

American Society of Civil Engineers
33 West 39th Street, New York 18, N.Y.

Name_____

Please send me____ copy(s) of the BIBLIOGRAPHY ON AIRPORT ENGINEERING (List price $8.00).

Address_____

City_____Zone___State_____

Enclosed is my remittance for $_____

My ASCE membership grade is_____ . . . of 1960-41